

WHAT IS CLAIMED IS

[1] A variable valve lift device of an internal combustion engine, comprising: a rocker arm (31) linked and connected to an engine valve (20) having a cam abutment part (50) abutting to a valve operating cam (29); a first link arm (58) with one end portion rotatably connected to the rocker arm (31) and the other end portion rotatably supported at a fixed position of an engine body (11) via a fixed support shaft (57); a second link arm (59) with one end portion rotatably connected to the rocker arm (31); a movable support shaft (60) which rotatably supports the other end portion of the second link arm (59); a crank member (61) connected to the movable support shaft (60) allowing the movable support shaft (60) to perform angular displacement around an axis parallel with its axis and rotatably supported at the engine body (11); and drive means (62) connected to the crank member (61) to make the movable support shaft (60) perform angular displacement, wherein the crank member (61) is formed in a crank shape, having crank webs (61a) sandwiching the second link arm (59) from opposite sides, and a connecting part (61c) integrally joining both the crank webs (61a) at a position where interference with the second link arm (59) is avoided, and the movable support shaft (60) is connected to the crank member (61) to connect both the crank webs (61a).

[2] The variable valve lift device of an internal combustion engine according to claim 1, wherein a stopper pin (105) parallel with an axis of rotation of the crank member (61)

is provided to protrude at the crank web (61a) to restrain a rotation range of the crank member (61) by engagement with the engine body (11) side.

[3] The variable valve lift device of an internal combustion engine according to claim 1 or 2, wherein the crank member (61) is supported at the engine body (11) at opposite sides of the rocker arm (31).

[4] The variable valve lift device of an internal combustion engine according to claim 1, wherein the single crank member (61) common to a plurality of cylinders arranged in line is supported at the engine body (11).

[5] The variable valve lift device of an internal combustion engine according to claim 1, wherein the crank member (61) has a journal part (61b) perpendicularly connecting to an outer face of the crank web (61a), and the journal part (61b) is rotatably supported between an upper holder (38) forming a part of a cam holder (41) rotatably supporting a camshaft (30) provided with the valve operating cam (29) and joined to the cylinder head (14) of the engine body (11), and a lower holder (77) joined to the upper holder (38) from below.

[6] The variable valve lift device of an internal combustion engine according to claim 5, wherein the lower holder (77) which is a separate body from the cylinder head (14) is fastened to the upper holder (38).

[7] The variable valve lift device of an internal combustion engine according to claim 5 or 6, wherein a roller bearing

(79) capable of being split into halves is interposed between the upper and lower holders (38, 77) and the journal part (61b).

[8] The variable valve lift device of an internal combustion engine according to claim 5, wherein a crank member support boss part (80) protruded to the crank web (61a) side is formed in the upper and lower holders (38, 77) joined to each other, and the journal part (61b) penetrating through the crank member support boss part (80) is rotatably supported between the upper and lower holders (38, 77).

[9] The variable valve lift device of an internal combustion engine according to claim 8, wherein a camshaft support boss part (81) protruded to the rocker arm (31) side is formed in the upper holder (38) and a cap (39) joined to the upper holder (38) from above, and the camshaft (30) having the valve operating cam (29) penetrates through the camshaft support boss part (81) and is rotatably supported between the upper holder (38) and the cap (39).

[10] The variable valve lift device according to claim 9, wherein a rib (82) connecting the crank member support boss part (80) and the camshaft support boss part (81) is provided to protrude at the upper holder (38).

[11] The variable valve lift device according to claim 1, wherein the crank member (61) is disposed between the engine valve (20) and a plug cylinder (87) provided at a cylinder head (14) so that an outer face of the connecting part (61c) is opposed to the plug cylinder (87), and a relief groove (88)

for avoiding interference with the plug cylinder (87) is formed on the outer face of the connecting part (61c).